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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,441	01/09/2004	Daniel J. Schlitz	PU2109	7983

7590 11/30/2006

Mr. Edward J. Timmer  
P.O. Box 770  
Richland, MI 49083-0770

EXAMINER
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CANNING, ANTHONY J

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/754,441

Applicant(s)

SCHLITZ ET AL.

Examiner

Anthony J. Canning

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Acknowledgement of Election*

The election to the instant application was entered on 11 September 2006.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Robinson (American Institute of Electrical Engineering, Volume 80, Part 1, Communication and Electronics, 1961, pages 143-150) (of record).

As to claim 1, Robinson discloses a pump device for gaseous fluid (page 143, middle column, second paragraph), comprising an ion generating region having an electron-emitting cathode electrode (page 144, Electrical Fundamentals section, second paragraph, the emitting electrodes are cathode electrodes) for generating unipolar ions (page 144, Electrical Fundamentals section, the last paragraph to begin on the left hand column, “wholly of ions of one kind” are unipolar ions) in the fluid and a separate pumping region (page 144, Electrical Fundamentals, the first paragraph; the electric field impressed on the ionized gas is downstream of the emitting regions, since the ion generating region causes the gas to be ionized) disposed downstream of the ion generating region, said pumping region including pumping electrodes for generating an

electric field in a manner that imparts motion to the ions and thus to the fluid (page 144, Electrical Fundamentals, the second paragraph; the collecting electrodes are the pumping electrodes).

As to claim 2, Robinson discloses the pump device of claim 1. Robinson further discloses wherein the electron-emitting cathode electrode emits electrons at room temperature in atmospheric air (page 143, the paragraph beginning after the Synopsis and finishing in the middle column).

As to claim 3, Robinson discloses the pump device of claim 1. Robinson further discloses an anode disposed at the ion-generating region (page 144, middle column, last paragraph; the plan-parallel electrodes will include a cathode and an anode) and to which a positive voltage bias is applied to cause the cathode electrode to emit electrons into the fluid (page 144, left hand column, the second paragraph in the Electrical Fundamentals section).

As to claim 4, Robinson discloses the pump device of claim 1. Robinson further discloses that the electron-emitting cathode electrode includes a conical tip (page 146, middle column, the first paragraph under the Blower Design section, the needle electrode has a needle point tip).

As to claim 5, Robinson discloses the pump device of claim 1. Robinson further discloses that the pumping region comprises a series of pumping electrode sets whose polarity is switched in a manner to generate an electric field that imparts motion to the unipolar ions and thus the fluid in the direction (page 145, the Blowers in Series section, each electrode in the electrode set will have a switched polarity, one positive and one negative, which causes the flow of ions).

As to claim 19, Robinson discloses a gaseous fluid pump, comprising a series of pumping electrodes disposed along a fluid flow path and whose polarity is switched in a manner (page 144, middle column, last paragraph; pages 145 and 146, the Blowers in Series section; the electrodes have an electric field imparted therebetween, one of the electrodes is positively biased while the other is negatively biased; also the polarity of the electrodes is changed when the blower is turned on) for generating an electric field in a manner that imparts motion to unipolar ions present in the gaseous fluid and thus to the fluid in the direction of the flow path (pages 145 and 146, the Blowers in Series section).

As to claim 20, Robinson discloses the pump of claim 19. Robinson further discloses that the electric field imparts motion to unipolar ions present in air (page 143, the paragraph beginning after the Synopsis and finishing in the middle column).

As to claim 21, Robinson discloses a gaseous fluid pump, including a first electrode and a second electrode disposed along a fluid flow path and whose polarity is switched in a manner (page 144, middle column, last paragraph; pages 145 and 146, the Blowers in Series section; the electrodes have an electric field imparted therebetween, one of the electrodes is positively biased while the other is negatively biased; also the polarity of the electrodes is changed when the blower is turned on) for generating an electric field that imparts motion (page 144, Electrical Fundamentals section, second paragraph, the emitting electrodes and the collecting electrodes) to unipolar ions present in the gaseous fluid and thus to the fluid in the direction of the flow path (page 144, Electrical Fundamentals section, the last paragraph to begin on the left hand column, "wholly of ions of one kind" are unipolar ions).

As to claim 22, Robinson discloses a gaseous fluid pump, comprising an ion generating region having an anode (page 144, middle column, last paragraph; the plan-parallel electrodes will include a cathode and an anode) and an electron-emitting cathode (page 144, Electrical Fundamentals section, second paragraph, the emitting electrodes are cathode electrodes) for generating unipolar ions (page 144, Electrical Fundamentals section, the last paragraph to begin on the left hand column, "wholly of ions of one kind" are unipolar ions) in the fluid and a series of pumping electrodes disposed along a fluid flow path and whose polarity is switched in a manner (page 144, middle column, last paragraph; pages 145 and 146, the Blowers in Series section; the electrodes have an electric field imparted therebetween, one of the electrodes is positively biased while the other is negatively biased; also the polarity of the electrodes is changed when the blower is turned on) for generating an electric field in a manner that imparts motion to unipolar ions present in the gaseous fluid and thus to the fluid in the direction of the flow path (pages 145 and 146, the Blowers in Series section).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson (American Institute of Electrical Engineering, Volume 80, Part 1, Communication and

Electronics, 1961, pages 143-150) (of record) in view of Kalman et al. (Applied Thermal Engineering 21, 2001, 265-282) (of record).

As to claim 6, Robinson discloses the pump device of claim 1. Robinson et al. further disclose a plurality of pump devices (pages 145 and 146, the Blowers in Series section). Robinson fails to disclose a combination of a heat generating electronic component and a cooling system in thermal transfer relation with the heat-generating component to remove heat therefrom using a gaseous heat transfer fluid, said cooling system including a plurality of pump devices of claim 1 to impart motion to the heat transfer fluid relative to the heat-generating component.

Kalman et al. disclose combining a heat generating electronic component and a cooling system in thermal transfer relation with the heat-generating component to remove heat therefrom using a gaseous heat transfer fluid (pages 269-270 the Experimental section). Kalman et al. further disclose that the electrostatic blower is used to cool heat-generating bodies, such as power-unit chips (see Abstract). Kalman et al. do not specifically disclose a plurality of pump devices. However, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the pump device of Robinson to include that the pump device is used to cool a heat generating electronic component, as disclosed by Kalman et al., for the added benefit of cooling power-unit chips.

As to claim 7, Robinson and Kalman et al. disclose the combination of claim 6. Kalman et al. further disclose that the pumping electrodes reside on one or more heat transfer surfaces (see Fig. 1; pages 269-270; the heat transfer surfaces can be any of the heating plate). Kalman et

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al. disclose that the electrostatic blower is used to cool heat-generating bodies, such as power-unit chips.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the pump device of Robinson to include that the pumping electrodes reside on one or more heat transfer surfaces, as disclosed by Kalman et al., for the added benefit of cooling power-unit chips.

As to claim 8, Robinson and Kalman et al. disclose the combination of claim 7. Kalman et al. further disclose that the one or more heat transfer surfaces comprise one or more surfaces of the component (see Fig. 1, pages 269-270, the Experimental section) the heat transfer.

Kalman et al. disclose that the electrostatic blower is used to cool heat-generating bodies, such as power-unit chips.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the pump device of Robinson to include that the one or more heat transfer surfaces comprise one or more surfaces of the component, as disclosed by Kalman et al., for the added benefit of cooling power-unit chips.

### ***Response to Arguments***

Regarding the applicant's arguments that the emitting and collecting electrodes of Robinson both generate ions, the examiner respectfully disagrees. The emitting electrodes of Robinson emit the electrons, while the collecting electrodes are oppositely biased and aid in the emission of the electrons from the emitting electrodes.



The ion-generating region of Robinson is the tip of the emitting electrode. The pumping region is downstream, because the electrons and the formed ions are drawn away from the emitting electrode.

Regarding the applicant's argument that the pumping electrodes of Robinson do not switch polarity to generate an electric field, the examiner respectfully disagrees. The polarity of the electrodes must be switch, one positive and one negative, or an electric field would not be generated. Also, when the electrodes are turned on, they go from being uncharged to having a positive or negative bias.

#### ***Final Rejection***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

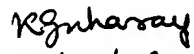
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Canning   
Patent Examiner  
Art Unit 2879

  
11/27/06